San Joaquin County and Delta Water Quality Coalition and California Farm Bureau Federation

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Overview

- Groundwater Assessment Reports Ignored
- Value of High and Low Vulnerability Designations
- Cost v. Value of new nitrogen coefficients and statistical analysis
- Proposal counter to Expert Panel Recommendations
- Field level data reporting
- Water supply well testing requirements
- Significant increased program costs

12 New Groundwater Assessments Reports

- Represent the most current, comprehensive groundwater quality studies available for the Central Valley
- Customized to each geographic area at a cost of millions of dollars, funded by irrigated agriculture.
- Ignored in the development of the Proposed Order.

Field level reporting to the RB

- Undermines trust in the program
- Exposes data to public scrutiny that has limited scientific value
- Will emphasize reporting skills, rather than improvements in water quality
- Takes limited resources away from research and education and analysis of data collected from members

Drinking Water Well Testing

- Not feasible to link to irrigated agriculture
  - Different owners, control
- Coalitions unwilling to undertake responsibility

Increased Costs

- No economic impact analysis for the proposed changes
- Coalitions already struggling to keep members with increased fee structure
- Costly new proposals should be phased in slower and with more prioritization to be realistic
- Maintaining membership is the most important goal to improving water quality

Low & High Vulnerability Areas

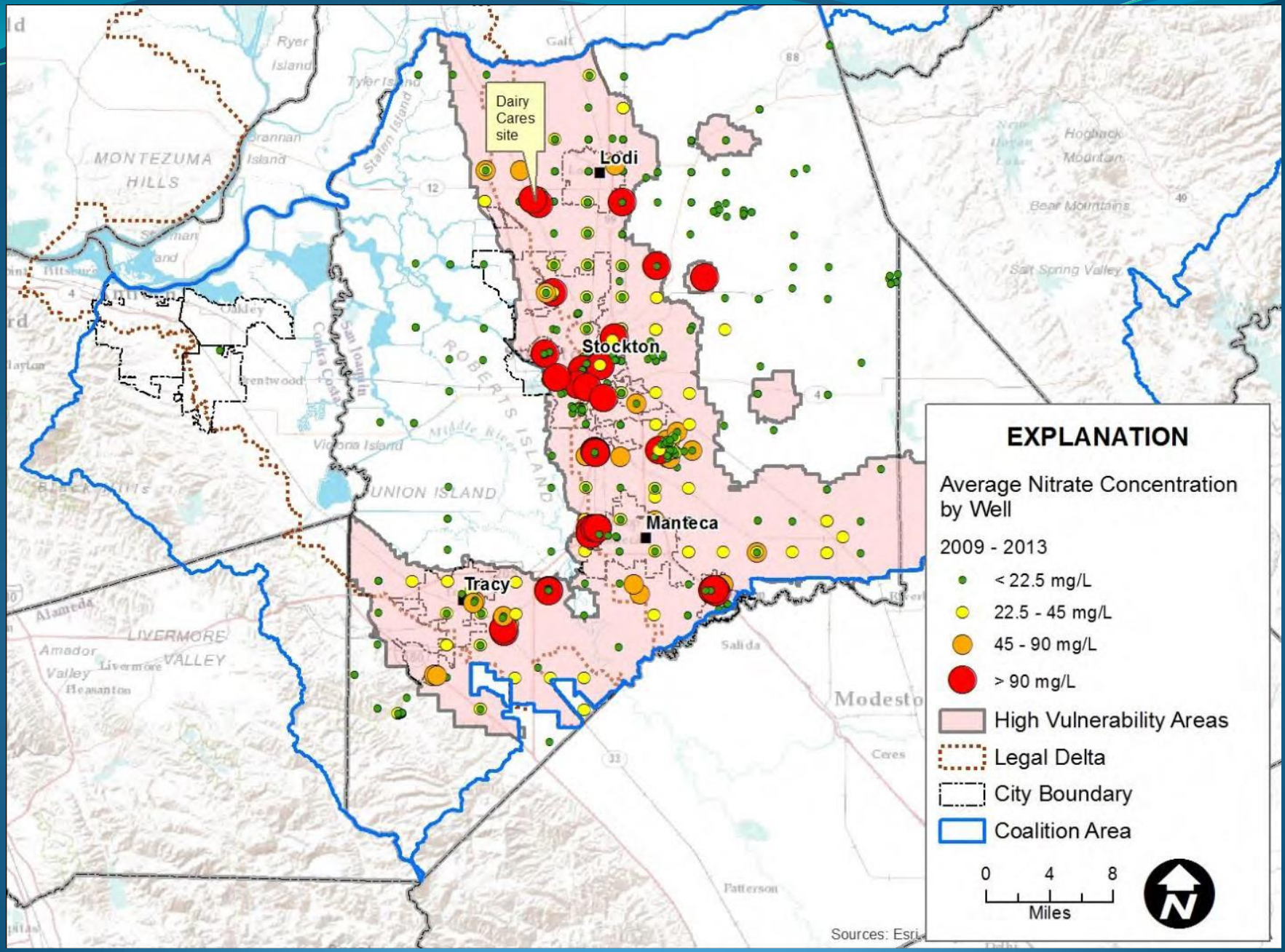
Mike Wackman
Executive Director
San Joaquin County and Delta Water Quality Coalition

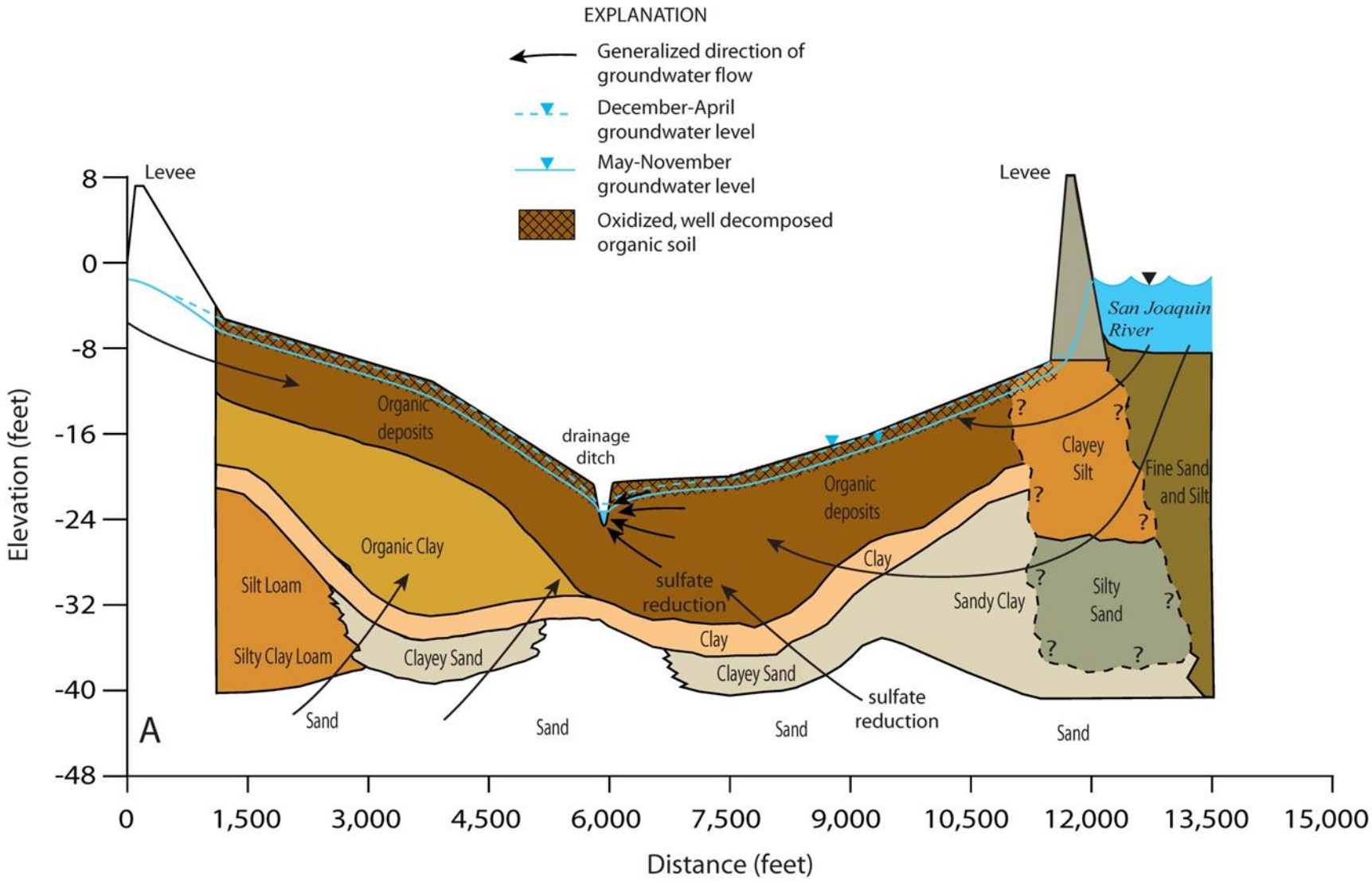
The necessity to be able to designate areas

- Eliminates unnecessary data collection
- Allows Coalitions to concentrate on those areas of greatest concerns
- Focuses limited resources

Low vulnerable areas in San Joaquin County and Delta Water Quality Coalition

- The Delta
  - Unique Characteristics
    - Water flows upward not downward
    - Artesian effect


Dairy Cares site
Lodi
Stockton
Manteca
Tracy
MONTEZUMA HILLS
UNION ISLAND
ROBERTS ISLAND
LIVERMORE VALLEY
Modesto
Sources: Esri
EXPLANATION
Average Nitrate Concentration by Well
2009 - 2013
< 22.5 mg/L
22.5 - 45 mg/L
45 - 90 mg/L
> 90 mg/L
High Vulnerability Areas
Legal Delta
City Boundary
Coalition Area
0 4 8
Miles
N


EXPLANATION
Generalized direction of groundwater flow
December-April groundwater level
May-November groundwater level
Oxidized, well decomposed organic soil
Levee
Levee
San Joaquin River
Organic deposits
drainage ditch
Organic deposits
Clayey Silt
Fine Sand and Silt
Organic Clay
Silt Loam
Silty Clay Loam
Clayey Sand
sulfate reduction
Clay
Clayey Sand
Clay
Sandy Clay
Silty Sand
sulfate reduction
Sand
Sand
Sand
Sand
A
Elevation (feet)
8
0
-8
-16
-24
-32
-40
-48
0
1,500
3,000
4,500
6,000
7,500
9,000
10,500
12,000
13,500
15,000
Distance (feet)

High & Low Vulnerabilities

- In Delta, why collect data that is basically meaningless to groundwater quality
- Have been testing in the delta return drains and have very few detection nitrates over the limits
- Nitrogen Applications do not effect groundwater quality in the Delta area as determined in our Groundwater Assessment Report
- Large expense for data collection for the grower, Coalition, and Regional Board without having a true value.

Regional Differences

- Orders were developed because of regional differences
- One size approach does not fit
- Agriculture is a highly variable system
- Soils, groundwater levels, temperatures, rainfall, - all have different effect in different regions
- Farmers in different regions need to farm differently in order to be sustainable
- Reporting of this information for large scale analysis will not improve water quality

Expert Panel Recommendations

What did the panel really recommend

Bill Brush

- Member, Agricultural Expert Panel
- Member, Almond Board of California
- Member, East San Joaquin Water Quality Coalition
- Certified Crop Advisor (1996 – present)
- Pest Control Advisor (1990 – present)
- Expert on soil fertility & water management
- Consults on over 100 crops in CA & throughout the world

Education and Outreach

- "Development of a very strong, comprehensive and sustained educational and outreach program"
  - In the current order under the Nitrogen Self Certification Class
  - Also, CCA training through California Department of Food and Agriculture
- "Education and knowledge transfers must be ongoing"
  - Through universities, farm advisors, CCA's
  - Through the current Coalition structure

A/R ratio

- Not to be used as a regulatory tool
  - Large variability
  - To be used as a “metric for evaluating progress” NOT as a regulatory tool
- Standard deviation from the ratio
  - Not in the panel’s recommendations
  - Due to variability in weather, soils, cropping year, pest pressures, not a good measurement of determining if properly applying nitrogen

Understanding the limitation of A/R ratio

- Incomplete information on most crops
- Wide variety of crops grown in CA
- Differing and limited numbers from different sources
  - FREP – CDFA Fertilizer Research and Education Program
    - Coalitions currently looking to work with FREP to fund research
  - USDA NRCS – Natural Resource Conservation Service
  - IPNI – International Plant Nutrition Institute

Nitrogen Applied and Removed – what happens in the real world

Terry Prichard

- Water Management Specialist, Emeritus Dept LAWR, UC Davis
- Certified Crop Advisor
- Certified Agronomist
- Certified Soil Scientist
- Principle Developer of the Grower Nitrogen Management Plan Self Certification Program
- Author of numerous UC publications on growing crops considering soil, water, pesticides, nutrients and salinity.
- Numerous research project on water, soil, nutrients, pesticides and salinity

Applied Nitrogen / Removed Nitrogen

- All Sources
  - Fertilizer
    - Synthetic and organic (composts, manures)
  - Irrigation Water N content
  - Residual Nitrogen
    - Soluble (available at planting)
    - Mineralized Nitrogen during crop season

Residual Nitrogen in Soil: Enter the amount of nitrogen available, as pounds per acre, to the crop during the growing season. This may be estimated by analyzing a soil sample and/or by tracking prior applications.

1. Soil Available Nitrogen at planting --
   Soil analysis of root zone

2. Soil Mineralized Nitrogen over the season
   105 day soil digestion/ N analysis

Removed Nitrogen

- The amount of Nitrogen removed in harvested crop portion or stored in perennial tissues

Tomato Study of 14 fields Luzcano 2015

Harvest removed	# N/acre	Yield ton/ac	# N/ton
Average	134	53	2.52
Min	93	40	1.95
Max	174	63	3.11

Removed Nitrogen

- The amount of Nitrogen removed in harvested crop portion or stored in perennial tissues

Tomato Study of 14 fields Luzcano 2015

Harvest removed	A/R	A-R
Average	2.62	207
Min	1.56	75
Max	5.80	528
Std dev	1.14	127

Solution to High A/R

- Pre-plant soil N analysis
  - At specific depths and bed locations
- Grower education to ensure practice adoption

Corn Production

	Plant uptake/applied	Harvest N	A/R
• Grain corn	291	134	2.0
• Silage corn	291	191	1.0

- Nitrogen per unit harvested crop
  - Not well defined for the majority of crops
- Yields vary on factors not related to N use
  - and therefore A/R
- Some of the required measurements are difficult to take and use in a timely fashion
- Some of the “estimations” result in considerable errors in determining the A/R

Requirements to Submit All Raw Data

Kari Fischer
Legal Counsel
California Farm Bureau Federation

Raw data submittals

- Farm Evaluations
- Irrigation and Nitrogen Management Plans

Audit Compliance Program

- Regional Board currently conducting inspections on parcels to evaluate compliance with General Order
  - Audit Compliance Program
- Current inspection program allows the Regional Board reasonable oversight, to verify accuracy, and includes sufficient feedback mechanisms
- Submittal of all raw data is unnecessary, overly burdensome, and costly

Let the current Central Valley regulatory program work

Allow current regulatory program to work to improve water quality

- Coalitions interface, educate and help growers improve water quality
- Regional Board provides oversight, compliance audits, enforcement when necessary
- Allow Coalitions to analyze the information – determine those areas that need to be addressed
- Let Coalitions spend limited resources on education and outreach, not meaningless paperwork